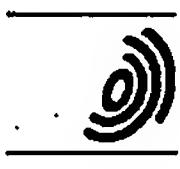


**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

|   |  |  |                       |
|---|--|--|-----------------------|
| Applicant's or agent's file reference<br>CLA/P104518WO  | <b>FOR FURTHER ACTION</b>  |  | See Form PCT/IPEA/416 |
| International application No.<br>PCT/GB2005/000038  | International filing date (day/month/year)<br>07.01.2005                         | Priority date (day/month/year)<br>07.01.2004 |                       |
| International Patent Classification (IPC) or national classification and IPC<br>INV. G01N33/533   |  |  |                       |
| Applicant<br>UNIVERSITY OF SUNDERLAND et al.  |  |  |                       |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 3 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |  |  |                       |
| <p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the report</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input checked="" type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>  |  |  |                       |
| Date of submission of the demand<br><br>04.11.2005  | Date of completion of this report<br><br>04.04.2006                              |  |                       |
| Name and mailing address of the international preliminary examining authority:<br><br><br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465  | Authorized officer<br><br>Gonçalves Mauger M L<br>Telephone No. +49 89 2399-8127 |  |                       |

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10/585523

IAP20 Rec'd PCT/PTO 07 JUL 2006

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INTERNATIONAL PRELIMINARY REPORT  
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**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-4 as originally filed

**Claims, Numbers**

1-30 received on 09.01.2006 with letter of 05.01.2006

**Drawings, Sheets**

1/1 as originally filed

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
  - the entire international application,
  - claims Nos. 30
    - because:
      - the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
      - the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
      - the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
    - no international search report has been established for the said claims Nos. 30
    - the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

|                            |  |
|----------------------------|--|
| the written form           | <input type="checkbox"/> has not been furnished            |
|                            | <input type="checkbox"/> does not comply with the standard |
| the computer readable form | <input type="checkbox"/> has not been furnished            |
|                            | <input type="checkbox"/> does not comply with the standard |
    - the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
    - See separate sheet for further details

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

|                               |      |        |      |
|-------------------------------|------|--------|------|
| Novelty (N)                   | Yes: | Claims | 1-29 |
|                               | No:  | Claims |      |
| Inventive step (IS)           | Yes: | Claims |      |
|                               | No:  | Claims | 1-29 |
| Industrial applicability (IA) | Yes: | Claims | 1-29 |
|                               | No:  | Claims |      |

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VI Certain documents cited**

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1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

**see separate sheet**

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**Section III**

1. The claim 30 relates to subject-matter in respect of which no international search report has been established and thus need not be subject of an international preliminary examination (Rule 66.1(e) PCT). Furthermore, no meaningful opinion about novelty, inventive step and industrial applicability can be given for the subject-matter of claim 30 because the vague wording "substantially as described with reference.." and the lack of any technical features, which render the scope of the claim unclear.

**Section V**

1. The following documents are cited in the search report:  
D1: US-B1-6 306 662  
D2: US-B1-6 194 213  
D3: US 2002/001716  
D4: WO 03/083481  
D5: US-A-6 048 546  
D6: WO 2004/063387  
D7: US-B1-6 495 352  
D8: US-A-4 176 205
2. The newly filed claims 1-30 Do not contravene the requirements of Article 34 (2) b) PCT. The newly filed claim 1 corresponds to the subject-matter of previous claims 1 and 9; claim 30 corresponds to previous claim 33; previous claims 4, 5 were deleted and the remaining dependent claims renumbered accordingly.
3. The subject-matter of claim 1 is a nanoparticle , which encapsulates a fluorescent material, characterised in that the nanoparticle comprises a fluorescent dye based on entrapment of a protein dye conjugate or a DNA-dye conjugate within the nanoparticle.

Do discloses a method for developing latent fingerprints using fluorescent nanocomposites comprising a core formed by a quantum dot or a lanthanide complex

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coated with a polymeric dendrimer exposing surface amino-groups (see column 2, line 33 to column 7, line 25).

D2 (see column 2, line 53, to column 5, line 55) discloses a method for detecting lipid membranes based on the use of lipophilic, functionalised, fluorescent nanocrystals.

D3 shows conjugates formed by covalent attachment of a biological binding partner to a liposome encapsulating a fluorescent nanocrystal (See pages 2-5 and examples 1-2).

D4 describes silica gel nanoparticles encapsulating an organic or inorganic fluorescent material (pages 9-12). The particles are used as marker systems in bioanalytics.

D5 relates to fluorescent nanoparticles formed by encapsulation of a fluorescent lipid bilayer material in a silica matrix (see columns 5 and 6; claim 1).

The subject-matter of claim 1 is not explicitly disclosed in the known prior art documents and thus it is novel (Article 33 (2) EPC).

4. The subject-matter of claim 1 is not considered to be based on an inventive concept (Article 33 (3) EPC) for the following reasons: it relates to obvious alternatives which fall within the routine practice in this technical field and which D1 not seem to result in any unexpected technical effects (see D7 for sol gel derived nanoparticles encapsulating biomolecules and biomolecule conjugates, and D8 for a fingerprint powder containing a mixture of silica and fluorescent dye).  
Dependent claims 2-26 do not contain an inventive concept per se and cannot therefore be combined with the features of claim 1 to form a basis for inventive subject-matter (Article 33 (2) EPC).
5. The above comments also relate to the subject-matter of claim 27, and to the claims dependent thereon (Article 33 (2) and (3) EPC).

**Section VI**

WO-A-2004/063387